

EXHIBIT 2

Sequence_listing.TXT
SEQUENCE LISTING

<110> Hurst, Timothy Raymond
<120> MUTANT FORMS OF EtxB AND CtxB AND THEIR USE AS CARRIERS
<130> P011729US
<140> US 10/743,391
<141> 2003-12-22
<150> GB 01153824
<151> 2001-06-22
<160> 19
<170> PatentIn version 3.5
<210> 1
<211> 8
<212> PRT
<213> Escherichia coli

<220>
<221> MUTAGEN
<222> (1)..(8)
<223> May be any amino acid.

<400> 1

Glu Val Pro Gly Ser Gln His Ile
1 5

<210> 2
<211> 8
<212> PRT
<213> Escherichia coli

<220>
<221> MUTAGEN
<222> (1)..(1)
<223> May be any amino acid.

<220>
<221> MUTAGEN
<222> (6)..(6)
<223> May be any amino acid.

<220>
<221> MUTAGEN
<222> (7)..(7)
<223> May be any amino acid.

<400> 2

Glu Val Pro Gly Ser Gln His Ile
1 5

<210> 3

Sequence_listing.TXT

<211> 8
 <212> PRT
 <213> Escherichia coli

<220>
 <221> MUTAGEN
 <222> (7)..(7)
 <223> Ala or Ser

<400> 3

Glu Val Pro Gly Ser Gln His Ile
 1 5

<210> 4
 <211> 8
 <212> PRT
 <213> Artificial

<220>
 <223> Synthetic peptide

<400> 4

Ser Ile Ile Asn Phe Glu Lys Leu
 1 5

<210> 5
 <211> 9
 <212> PRT
 <213> Artificial

<220>
 <223> Synthetic peptide

<400> 5

Cys Ser Ile Ile Asn Phe Glu Lys Leu
 1 5

<210> 6
 <211> 16
 <212> PRT
 <213> Artificial

<220>
 <223> Synthetic peptide

<400> 6

Cys Glu Lys Leu Ala Gly Phe Gly Ser Ile Ile Asn Phe Glu Lys Leu
 1 5 10 15

<210> 7
 <211> 19
 <212> PRT
 <213> Artificial

Sequence_listing.TXT

<220>

<223> Synthetic peptide

<400> 7

Cys Ala Val Gly Ala Gly Ala Thr Ala Glu Glu Ser Ile Ile Asn Phe
1 5 10 15

Glu Lys Leu

<210> 8

<211> 26

<212> PRT

<213> Artificial

<220>

<223> Synthetic peptide

<400> 8

Cys Glu Lys Leu Ala Gly Phe Gly Ala Val Gly Ala Gly Ala Thr Ala
1 5 10 15

Glu Glu Ser Ile Ile Asn Phe Glu Lys Leu
20 25

<210> 9

<211> 26

<212> PRT

<213> Artificial

<220>

<223> Synthetic peptide

<400> 9

Cys Glu Lys Leu Ala Gly Phe Gly Ala Arg Gly Ala Gly Ala Thr Ala
1 5 10 15

Glu Glu Ser Ile Ile Asn Phe Glu Lys Leu
20 25

<210> 10

<211> 31

<212> PRT

<213> Artificial

<220>

<223> Synthetic peptide

<400> 10

Cys Glu Lys Leu Ala Gly Phe Gly Ala Val Gly Ala Gly Ala Thr Ala
1 5 10 15

Sequence_listing.TXT

Glu Glu Ser Ile Ile Asn Phe Glu Lys Leu Thr Glu Trp Thr Ser
 20 25 30

<210> 11
 <211> 14
 <212> PRT
 <213> herpes simplex virus 1
 <400> 11

Ala Gly Phe Gly Ala Val Gly Ala Gly Ala Thr Ala Glu Glu
 1 5 10

<210> 12
 <211> 103
 <212> PRT
 <213> Vibrio cholerae
 <400> 12

Thr Pro Gln Asn Ile Thr Asp Leu Cys Ala Glu Tyr His Asn Thr Gln
 1 5 10 15

Ile His Thr Leu Asn Asp Lys Ile Phe Ser Tyr Thr Glu Ser Leu Ala
 20 25 30

Gly Lys Arg Glu Met Ala Ile Ile Thr Phe Lys Asn Gly Ala Thr Phe
 35 40 45

Gln Val Glu Val Pro Gly Ser Gln His Ile Asp Ser Gln Lys Lys Ala
 50 55 60

Ile Glu Arg Met Lys Asp Thr Leu Arg Ile Ala Tyr Leu Thr Glu Ala
 65 70 75 80

Lys Val Glu Lys Leu Cys Val Trp Asn Asn Lys Thr Pro His Ala Ile
 85 90 95

Ala Ala Ile Ser Met Ala Asn
 100

<210> 13
 <211> 103
 <212> PRT
 <213> Vibrio cholerae
 <400> 13

Thr Pro Gln Asn Ile Thr Asp Leu Cys Ala Glu Tyr His Asn Thr Gln
 1 5 10 15

Ile His Thr Leu Asn Asp Lys Ile Phe Ser Tyr Thr Glu Ser Leu Ala
 20 25 30

Sequence_listing.TXT

Gly Lys Arg Glu Met Ala Ile Ile Thr Phe Lys Asn Gly Ala Thr Phe
35 40 45

Gln Val Glu Val Pro Gly Ser Gln Ala Ile Asp Ser Gln Lys Lys Ala
50 55 60

Ile Glu Arg Met Lys Asp Thr Leu Arg Ile Ala Tyr Leu Thr Glu Ala
65 70 75 80

Lys Val Glu Lys Leu Cys Val Trp Asn Asn Lys Thr Pro His Ala Ile
85 90 95

Ala Ala Ile Ser Met Ala Asn
100

<210> 14
<211> 103
<212> PRT
<213> Escherichia coli
<400> 14

Ala Pro Gln Thr Ile Thr Glu Leu Cys Ser Glu Tyr Arg Asn Thr Gln
1 5 10 15

Ile Tyr Thr Ile Asn Asp Lys Ile Leu Ser Tyr Thr Glu Ser Met Ala
20 25 30

Asp Lys Arg Glu Met Val Ile Ile Thr Phe Lys Ser Gly Glu Thr Phe
35 40 45

Gln Val Glu Val Pro Gly Ser Gln His Ile Asp Ser Gln Lys Lys Ala
50 55 60

Ile Glu Arg Met Lys Asp Thr Leu Arg Ile Thr Tyr Leu Thr Glu Thr
65 70 75 80

Lys Ile Asp Lys Leu Cys Val Trp Asn Asn Lys Thr Pro Ile Ser Ile
85 90 95

Ala Ala Ile Ser Met Glu Asn
100

<210> 15
<211> 103
<212> PRT
<213> Escherichia coli
<400> 15

Sequence_listing.TXT

Ala Pro Gln Thr Ile Thr Glu Leu Cys Ser Glu Tyr Arg Asn Thr Gln
1 5 10 15

Ile Tyr Thr Ile Asn Asp Lys Ile Leu Ser Tyr Thr Glu Ser Met Ala
20 25 30

Gly Lys Arg Glu Met Val Ile Ile Thr Phe Lys Ser Gly Glu Thr Phe
35 40 45

Gln Val Glu Val Pro Gly Ser Gln His Ile Asp Ser Gln Lys Lys Ala
50 55 60

Ile Glu Arg Met Lys Asp Thr Leu Arg Ile Thr Tyr Leu Thr Glu Thr
65 70 75 80

Lys Ile Asp Lys Leu Cys Val Trp Asn Asn Lys Thr Pro Ile Ser Ile
85 90 95

Ala Ala Ile Ser Met Glu Asn
100

<210> 16
<211> 103
<212> PRT
<213> Escherichia coli

<400> 16

Ala Pro Gln Thr Ile Thr Glu Leu Cys Ser Glu Tyr Arg Asn Thr Gln
1 5 10 15

Ile Tyr Thr Ile Asn Asp Lys Ile Leu Ser Tyr Thr Glu Ser Met Ala
20 25 30

Gly Lys Arg Glu Met Val Ile Ile Thr Phe Lys Ser Gly Glu Thr Phe
35 40 45

Gln Val Glu Val Pro Gly Ser Gln Ala Ile Asp Ser Gln Lys Lys Ala
50 55 60

Ile Glu Arg Met Lys Asp Thr Leu Arg Ile Thr Tyr Leu Thr Glu Thr
65 70 75 80

Lys Ile Asp Lys Leu Cys Val Trp Asn Asn Lys Thr Pro Ile Ser Ile
85 90 95

Ala Ala Ile Ser Met Glu Asn
100

Sequence_listing.TXT

<210> 17
 <211> 103
 <212> PRT
 <213> Vibrio cholerae

<400> 17

Thr Pro Gln Asn Ile Thr Asp Leu Cys Ala Glu Tyr His Asn Thr Gln
 1 5 10 15

Ile His Thr Leu Asn Asp Lys Ile Phe Ser Tyr Thr Glu Ser Leu Ala
 20 25 30

Gly Lys Arg Glu Met Ala Ile Ile Thr Phe Lys Asn Gly Ala Thr Phe
 35 40 45

Gln Val Ala Val Pro Gly Ser Gln His Ile Asp Ser Gln Lys Lys Ala
 50 55 60

Ile Glu Arg Met Lys Asp Thr Leu Arg Ile Ala Tyr Leu Thr Glu Ala
 65 70 75 80

Lys Val Glu Lys Leu Cys Val Trp Asn Asn Lys Thr Pro His Ala Ile
 85 90 95

Ala Ala Ile Ser Met Ala Asn
 100

<210> 18
 <211> 103
 <212> PRT
 <213> Vibrio cholerae

<400> 18

Thr Pro Gln Asn Ile Thr Asp Leu Cys Ala Glu Tyr His Asn Thr Gln
 1 5 10 15

Ile His Thr Leu Asn Asp Lys Ile Phe Ser Tyr Thr Glu Ser Leu Ala
 20 25 30

Gly Lys Arg Glu Met Ala Ile Ile Thr Phe Lys Asn Gly Ala Thr Phe
 35 40 45

Gln Val Glu Val Pro Gly Ser Ala His Ile Asp Ser Gln Lys Lys Ala
 50 55 60

Ile Glu Arg Met Lys Asp Thr Leu Arg Ile Ala Tyr Leu Thr Glu Ala
 65 70 75 80

Sequence_listing.TXT

Lys Val Glu Lys Leu Cys Val Trp Asn Asn Lys Thr Pro His Ala Ile
85 90 95

Ala Ala Ile Ser Met Ala Asn
100

<210> 19

<211> 103

<212> PRT

<213> Escherichia coli

<400> 19

Ala Pro Gln Thr Ile Thr Glu Leu Cys Ser Glu Tyr Arg Asn Thr Gln
1 5 10 15

Ile Tyr Thr Ile Asn Asp Lys Ile Leu Ser Tyr Thr Glu Ser Met Ala
20 25 30

Gly Lys Arg Glu Met Val Ile Ile Thr Phe Lys Ser Gly Glu Thr Phe
35 40 45

Gln Val Glu Val Pro Gly Ser Gln Ser Ile Asp Ser Gln Lys Lys Ala
50 55 60

Ile Glu Arg Met Lys Asp Thr Leu Arg Ile Thr Tyr Leu Thr Glu Thr
65 70 75 80

Lys Ile Asp Lys Leu Cys Val Trp Asn Asn Lys Thr Pro Ile Ser Ile
85 90 95

Ala Ala Ile Ser Met Glu Asn
100